



UNITED STATES PATENT AND TRADEMARK OFFICE

cel

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,708	08/25/2003	Alfred Ecker	038741.52686US	9822

23911 7590 12/20/2005

CROWELL & MORING LLP
INTELLECTUAL PROPERTY GROUP
P.O. BOX 14300
WASHINGTON, DC 20044-4300

EXAMINER

LEE, PATRICK J

ART UNIT PAPER NUMBER

2878

DATE MAILED: 12/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/646,708	Applicant(s) ECKER ET AL.	
	Examiner Patrick J. Lee	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2005.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-13 and 15-20 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1,2,5-13 and 15-20 is/are rejected.
 7) ☒ Claim(s) 9 is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☒ The drawing(s) filed on 23 November 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This action is in response to amendment filed November 23, 2005.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the recesses in which the optical fibers are arranged must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 9 is objected to because of the following informalities: The unnecessary periods in lines 4-5 & 7 should be removed. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-2, 5-13, & 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,774,354 B2 to Ames.

With respect to claim 1, Ames discloses a pitch/roll sensor comprising optical fibers (12) with fiber optic Bragg gratings (18) as a Bragg grating sensor arranged on a mass (16) as a workpiece, where fibers (12) are arranged within notches (15) as recesses introduced into mass (16). While Ames does not explicitly disclose the

recesses (15) having a breadth and depth matched to the diameter of the optical fibers (12), such would have been obvious to one of ordinary skill in the art because such would allow for the fibers to be stationary and also to prevent any crushing of the fibers during shock events (see Ames column 2, lines 42-48).

With respect to claim 2, the modified Ames discloses grating sensor (18) mounted on the surface of mass (16).

With respect to claim 5, the modified Ames discloses a plurality of fibers (30, 32, 34) arranged in a different geometrical configuration through the use of bends (see figure 4) and a configuration with three separate fibers (see figure 1).

With respect to claim 6, the modified Ames does not explicitly disclose the bends of fiber (12') as having different curvatures, but such would have been obvious to one of ordinary skill in the art in order to give the device additional ability to distinguish among different metrological conditions.

With respect to claim 7, the modified Ames discloses the use of a grating sensor without curvature (see figure 1).

With respect to claim 8, the modified Ames does not explicitly disclose the use of angular straight lines, but such would have been obvious to one of ordinary skill in the art in order to grant the device additional sensitivity to shock events and changes in the positioning of the mass (16).

With respect to claim 9, the modified Ames discloses the use of one fiber with a curved section of approximately 90° and a curved section of approximately 180° (see figure 4).

With respect to claim 10-11, the modified Ames discloses mass (16) being a movable structure (see abstract) as a dynamically loaded component.

With respect to claim 12, Ames discloses a pitch/roll sensor comprising optical fibers (12) with fiber optic Bragg gratings (18) as a Bragg grating sensor arranged on a mass (16) as a workpiece, where fibers (12) are arranged within notches (15) as recesses introduced into mass (16). While Ames does not explicitly disclose the recesses (15) having a breadth and depth matched to the diameter of the optical fibers (12), such would have been obvious to one of ordinary skill in the art because such would allow for the fibers to be stationary and also to prevent any crushing of the fibers during shock events (see Ames column 2, lines 42-48).

With respect to claim 13, the modified Ames discloses grating sensor (18) mounted on the surface of mass (16).

With respect to claim 15, the modified Ames discloses a plurality of fibers (30, 32, 34) arranged in a different geometrical configuration through the use of bends (see figure 4) and a configuration with three separate fibers (see figure 1).

With respect to claim 16, the modified Ames does not explicitly state that the fibers (12) are bonded to notches (15), but such would have been obvious to one of ordinary skill in the art in order to prevent the fibers (12) from falling out during operation of the device.

With respect to claim 17, Ames does not explicitly state the application of the device to a blade of a turbine or housing of a turbine, but such would have been obvious to one of ordinary skill in the art as a mere matter of intended use of the device, as the

device taught by Ames produces accurate measurements of the positioning of the mass (16).

With respect to claim 18, the modified Ames does not explicitly state that the fibers (12) are bonded to notches (15), but such would have been obvious to one of ordinary skill in the art in order to prevent the fibers (12) from falling out during operation of the device.

With respect to claim 19, the modified Ames does not explicitly disclose the bends of fiber (12') as having different curvatures, but such would have been obvious to one of ordinary skill in the art in order to give the device additional ability to distinguish among different metrological conditions.

With respect to claim 20, the modified Ames does not explicitly state the application of the device to a blade of a turbine or housing of a turbine, but such would have been obvious to one of ordinary skill in the art as a mere matter of intended use of the device, as the device taught by Ames produces accurate measurements of the positioning of the mass (16).

Response to Arguments

7. Applicant's arguments with respect to claims 1-2, 5-13, & 15-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Lee whose telephone number is (571) 272-2440. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick J. Lee
Examiner
Art Unit 2878

PJL
December 12, 2005



Stephone B. Allen
Primary Examiner